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Richard Harding

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EXAMINER

HON, SOW FUN

ART UNIT

PAPER NUMBER

1794

NOTIFICATION DATE

DELIVERY MODE

08/19/2009

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

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Advisory Action

1. The request for reconsideration is entered, but fails to place the application in condition for allowance for the reasons set forth below.
2. Applicant argues that the alignment layer of Gass does not contain reactive compounds or reactive additives, but instead [contains reactive groups in the alignment material], and that furthermore, Gass does not disclose that the alignment layer, after preparation, contains a reactive mesogen additive with unreacted polymerizable groups.

Applicant is respectfully reminded that first of all, parent claim 1 recites “at least one reactive mesogen in polymeric form” as a member of a Markush group, which reads on what Applicant terms “reactive groups in the alignment material”.

Furthermore, the limitation of “after preparation of said alignment layer, said alignment layer contains unreacted polymerizable groups in said at least one reactive mesogen additive” encompasses the instance where some polymerizable groups remain unreacted after reaction of the polymerizable groups in the at least one mesogen additive, which is consistent with Applicant’s disclosure (it is also possible that the RM additive undergoes polymerization to a certain degree within the alignment layer before the subsequent LC layer is added, page 15, lines 9-12).

Gass is the primary reference that teaches an alternate embodiment of an alignment layer that contains a reactive acrylate compound after preparation of the alignment layer (column 4, lines 50-51) but is silent regarding the specifics of the reactive acrylate compound.

Onishi is the bridging reference that teaches that an alignment layer has better alignment control over the liquid crystal molecules when it contains a mesogenic component (orientation restricting force of the alignment film is sufficiently transmitted to the liquid crystal molecules, column 7, lines 10-25). O'Neill is the secondary reference that teaches an alignment layer ([0002]) that comprises a reactive acrylate mesogen additive with unreacted polymerizable groups (reactive liquid crystal formed from a reactive mesogen, Compound 4, [0025]).

Therefore, since Gass is silent regarding the type of reactive acrylate compound, it would have been necessary and hence obvious to have looked to the prior art for a suitable one. As such, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have used a reactive mesogen acrylate represented by formula II of Applicant, taught by O'Neill, or formula IIa of Applicant which is an obvious homolog of the one taught by O'Neill, as the reactive acrylate compound additive in the alignment layer of Gass, in order to obtain improved alignment control over the liquid crystal molecules, as taught by Onishi, where the alignment layer contains unreacted polymerizable groups in the reactive mesogen acrylate additive.

3. Applicant argues that Onishi teaches a polymerizable compound that is part of the liquid crystal layer, and not part of the alignment layer.

Applicant is respectfully apprised that Onishi is the bridging reference that teaches that an alignment layer has better alignment control over the liquid crystal molecules when it contains a mesogenic component (orientation restricting force of the alignment film is sufficiently transmitted to the liquid crystal molecules, column 7, lines

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10-25). O'Neill is the secondary reference that teaches an alignment layer ([0002]) that comprises a reactive acrylate mesogen additive with unreacted polymerizable groups (reactive liquid crystal formed from a reactive mesogen, Compound 4, [0025]).

4. Applicant argues that O'Neill teaches an alignment layer that contains a transport compound that is chemically bonded to the alignment layer, [and thus fails to teach an align layer that contains a reactive mesogen additive with unreacted polymerizable groups].

Applicant is respectfully apprised that the reactive mesogen additive with unreacted groups taught by O'Neill (Compound 4, [0025]) is not the same as the transport compound taught by O'Neill (Compounds 5-8, [0030-0036]).

5. Applicant argues that neither O'Neill nor Gass describe an alignment layer in which the alignment layer itself contains at least one reactive mesogen, since both use the reactive mesogen to form an additional layer on a conventional alignment layer; or an alignment layer that comprises a polymer film containing at least one reactive mesogen additive wherein the additive has unreacted polymerizable groups after preparation of the alignment layer.

Applicant is respectfully apprised that Gass teaches an alternate embodiment of an alignment layer that contains a reactive acrylate compound after preparation of the alignment layer (column 4, lines 50-51) but is silent regarding the specifics of the reactive acrylate compound. Onishi is the bridging reference that teaches that an alignment layer has better alignment control over the liquid crystal molecules when it contains a mesogenic component (orientation restricting force of the alignment film is

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sufficiently transmitted to the liquid crystal molecules, column 7, lines 10-25). O'Neill is the secondary reference that teaches an alignment layer ([0002]) that comprises a reactive acrylate mesogen additive with unreacted polymerizable groups (reactive liquid crystal formed from a reactive mesogen, Compound 4, [0025]).

6. Applicant's arguments against the secondary reference of Ichimura are directed toward the primary combination of Gass in view of Onishi and O'Neill, and are addressed above.

Any inquiry concerning this communication should be directed to Sow-Fun Hon whose telephone number is (571)272-1492. The examiner can normally be reached Monday to Friday from 10:00 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Sample, can be reached on (571)272-1376. The fax phone number for the organization where this application or proceeding is assigned is (571)273-8300.

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/Sophie Hon/
Examiner, Art Unit 1794

/David R. Sample/
Supervisory Patent Examiner, Art Unit 1794